

case on the occurrence of this species from this area (Nagai district). Three species of otters namely the Asian small-clawed otter (*Aonyx cinerea*), smooth otter (*Lutra perspicillata*) and Eurasian otter (*Lutra lutra*) occur in India. Although the smooth otter is found throughout India, little is known about its population status and distribution in Tamil Nadu. Otters in general are becoming increasingly rare outside of national parks and wildlife sanctuaries, and are threatened in many areas due to poaching, habitat destruction and reduction in prey biomass (Foster-Turley *et al.* 1990). Otters are at the top of the food chain and they are indicators of habitat quality. When pollutants such as heavy metals and organochlorines like PCBs contaminate the environment, otters are among the first species to disappear (Mason and MacDonald 1986). The sighting of an otter along the coastal area in Nagai district indicates that this species can

survive in an unprotected area if the environment is healthy and if locals do not harm them. Further surveys are vital to estimate the population status of otters outside protected areas in Tamil Nadu State.

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3. IDENTIFICATION OF DORSAL GUARD HAIRS OF STRIPED HYENA *HYAENA HYAENA* (LINNAEUS, 1758) HYAENIDAE: CARNIVORA: MAMMALIA

(With one plate)

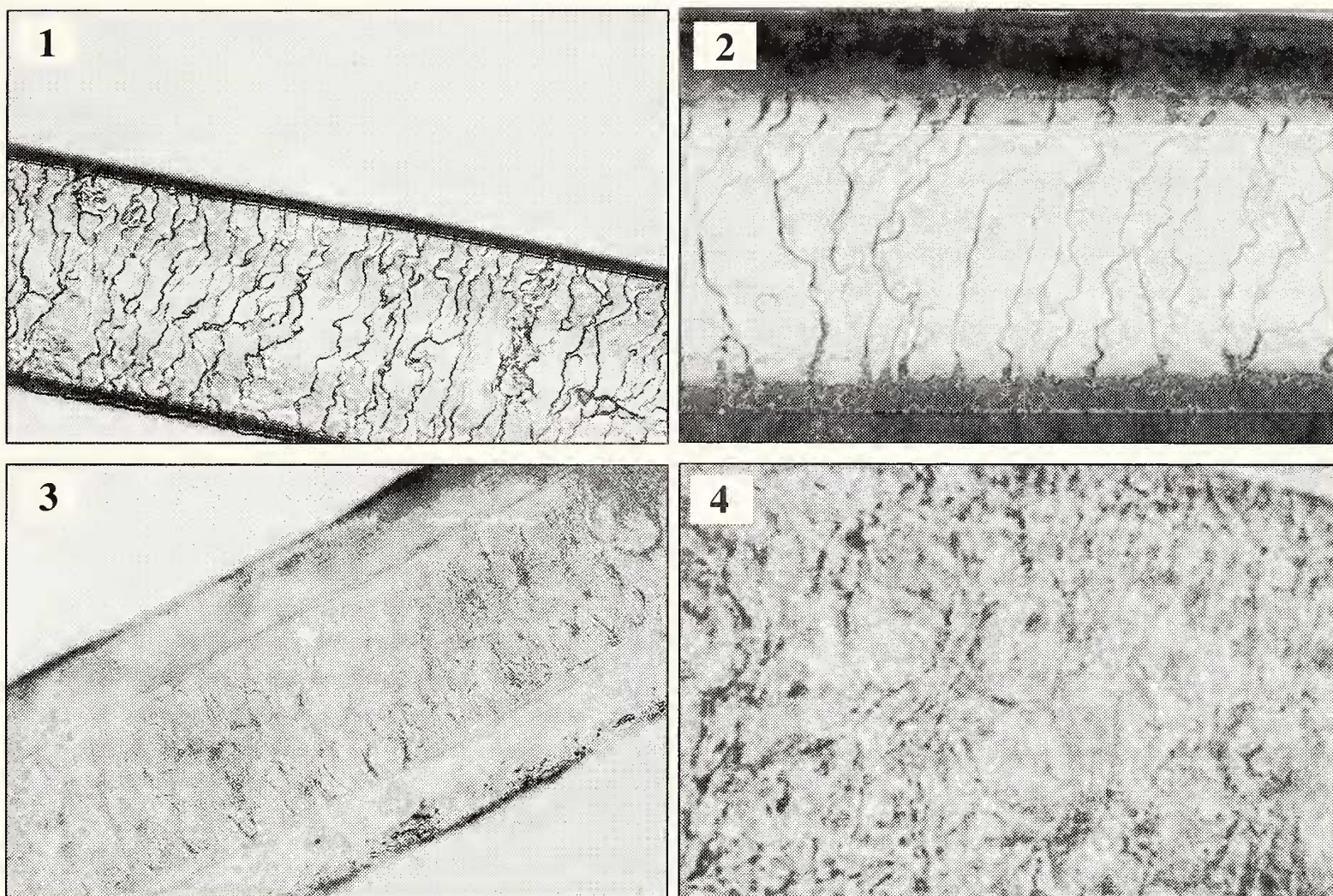
Hyaena hyaena, an efficient nocturnal forest scavenger, is distributed in northern and eastern Africa south to Tanzania, Asia Minor to Arabia, Iran, Transcaucasia, Turkmenia, India and Nepal (Honacki *et al.* 1982), but it has not been recorded from the countries east to the Bay of Bengal (Ellerman and Morrison-Scott 1966).

The hyena is included in Schedule III of the Wildlife (Protection) Act, 1972 amended in 1991. The species has declined rapidly due to habitat destruction and persecution by human beings and is thus declared 'Vulnerable' (Tikader 1983).

Koppikar and Sabnis (1976, 1977),

Chakraborty and De (1995), De and Chakraborty (1995), Chakraborty *et al.* (1996, 1999) and De *et al.* (1998) worked on the trichotaxonomy of different Indian carnivores. For identification, very little information is available on skin derivatives as well as hairs of hyena, except for that given by Koppikar and Sabnis (1976).

Samples were collected from each of the following dry preserved specimens present in the National Zoological Collection of the Zoological Survey of India, Kolkata: 2 examples (1 ♂, 1 ♀, Sunder, Balaghat, Chhattisgarh); 2 examples (2 ♂, Zoological Garden, Kolkata).



Figs 1-4: Cuticular scale and medulla structure of dorsal guard hair of *Hyaena hyaena*,
1. Surface structure: 40x, 2. Surface structure: 1000x, 3. Medulla structure: 400x,
4. Medulla structure: 1000x

Five spots with a diameter of 5-7 mm, almost equidistant from each other, were selected at the mid-dorsal region and guard hairs collected with a fine forceps from each spot. During collection, very often the woolly hair would get mixed with the guard hair, which were sorted before processing them further. The sample size varied from 30-50 in number.

For macro- and microscopic studies, samples were washed in different grades of acetone or carbon tetrachloride. To study cuticular scales, a thin film of clear varnish was drawn on a microscopic slide and dry treated hair was put on it to get the cast, and allowed to dry for 8-10 hours. Before examination under the microscope, the hair sample was pulled off gently. To study the medullary structure, hairs were cut into pieces and treated separately with carbon tetrachloride for 4 hours and then mounted on glass slides with Canada balsam-xylol (70:30) solution. Detailed methodology is available in Chakraborty and De (1995) and Chakraborty *et al.* (1996).

Structural nomenclature of cuticular as well as medullary configuration was adopted from Moore *et al.* (1974) and Brunner and Coman (1974). Mean and standard deviation are mentioned in parenthesis.

The findings are summarized below:

A. Physical Characters

Colour: Seal brown at tip, paler towards root, cream-buff at base; *Total length*: 30-96 mm (60 mm \pm 25.5); *Diameter*: Apical: 30-80 μ (58 μ \pm 15.36), Middle: 70-170 μ (118 μ \pm 32.49), Basal: 80-150 μ (113 μ \pm 34.94); *Shape and Nature*: Straight, banded, without shield, number of bands usually 2, but rarely 3.

B. Surface Structure

(Plate 1: Figs 1 & 2).

Scale Pattern: Irregular wave; *Scale Count*: 175-335 (295 μ \pm 0.22) per millimetre of

hair length; *Scale margin distance*: Intermediate; *Scale margin*: Crenate; *Side to side scale length* (SS): 57.25-71.5 μ (64.26 μ \pm 5.04); *Proximo-distal scale length* (PD) : 1.8-13.9 μ (10.75 μ \pm 2.05).

C. Medulla

(Plate 1: Figs 3 & 4)

Medullary configuration: Simple unbroken cellular; *Medullary Index*: 0.56-0.59 (0.57 \pm 0.002)

D. Cross section: Elliptical

In recent years, trichotaxonomy has gained significance for identifying mammals. Hausman (1920) stated that hairs of *H. hyaena* have 'Imbricate-Crenate' cuticular scale structure, whereas Koppikar and Sabnis (1976) stated that "no scales are visible and the borders are plain". But our study reveals that there are well-developed cuticular scales in *H. hyaena*. Scale pattern is 'Irregular wave' and the scale margin is 'Crenate' (Plate 1: Fig. 1 & 2). Thus, we agree with Hausman (1920).

According to Hausman (1920), hairs of *H. hyaena* have continuous nodose medulla, whereas Koppiker and Sabnis (1976) observed that in the proximal and medial region the medulla is continuous, while in the distal region, it is fragmented. But our studies show that the medullary configuration is 'Simple Unbroken Cellular' (Plate 1: Figs 3 & 4) with medullary index, 0.57 \pm 0.002.

Colour, shape, nature, scale pattern, scale margin and scale margin distance of dorsal guard hairs of *H. hyaena* are almost identical in all the 4 specimens studied so far. It is also found that, the measurements of cuticular scales and medullary configuration and medullary index have a similar trend in all the specimens studied, but length and diameter of the same vary a lot.

Cross-sectional structure is elliptical, which is quite different from other carnivores studied so far, but in Mustelidae and Procyonidae

it is rather elliptical (Teerink 1991).

Medullary configuration and index, colour, shape, and nature, scale pattern, structure, margin and distance, cross-sectional structure may, therefore, be considered to identify *H. hyaena* using the dorsal guard hairs.

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4. THE STATUS OF GAUR *BOS GAURUS* IN NORTH CACHAR HILLS DISTRICT OF ASSAM

(With one text-figure)

The gaur *Bos gaurus* H. Smith is widely distributed in northeastern India. However, except for a survey in north Bengal (Bhattacharyya *et al.* 1997) and a status report from Dibang Valley district, Arunachal Pradesh (Choudhury 1999), no significant work on this

bovine has been done in the region. The North Cachar Hills district (24° 59'-25° 49' N, 92° 31'-93° 28' E) of Assam is a known gaur area. During field visits between 1986 and 1997, information on the species, both past and present was gathered from the district. I report the findings here.